

Advanced pediatric cardiac imaging

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Advances in cardiac imaging techniques (including echocardiography, CT, MRI and 3-D rotational angiography) have expanded the diagnostic imaging capabilities for evaluating a wide variety of congenital and acquired cardiac disorders in children, including the effects of cardiotoxic drugs. And, as the survival of patients after (congenital) cardiac surgery and cancer therapy has increased over the past decades, the need for repeated cardiac imaging in children has increased considerably. However, imaging evaluation of the pediatric cardiac system is often challenging, particularly in young and uncooperative children when respiratory and motion artifacts might degrade image quality. Therefore, robust and fast imaging techniques allowing for both morphological and functional cardiac evaluation are needed to overcome these challenges. The strengths of CT include its volume coverage with high spatial resolution and short acquisition times. On the other hand, MRI allows for both morphological (with similar volume coverage as CT) and functional evaluation, including myocardial function, perfusion, pulmonary circulation and flow. Although radiation exposure by CT (and angiography) has decreased consistently due to the improvements in dose management techniques, the major advantage of MRI is the complete lack of ionizing radiation. This is of particular interest in the pediatric population, as children are more vulnerable to radiation-induced side effects and will have more years ahead in which these side effects might occur.

This minisymposium on advanced cardiac imaging will focus on new techniques in cardiac MRI and its clinical applications. Driessen et al. [1] will provide the reader with an in-depth overview of the recent advances in cardiac MRI hardware and acquisition techniques, followed by an illustration of its clinical applications in congenital cardiac malformations by Helbing [2]. Finally, the importance of a multidisciplinary approach to achieve the most optimal imaging and treatment strategy in this group of complex diseases will be discussed [3]. As guest editors of this minisymposium, we want to express our appreciation to the authors for their contributions. We sincerely hope that these contributions will help readers to further optimize cardiac MRI and clinical decision-making in pediatric cardiac diseases.

Conflicts of interest None

References

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